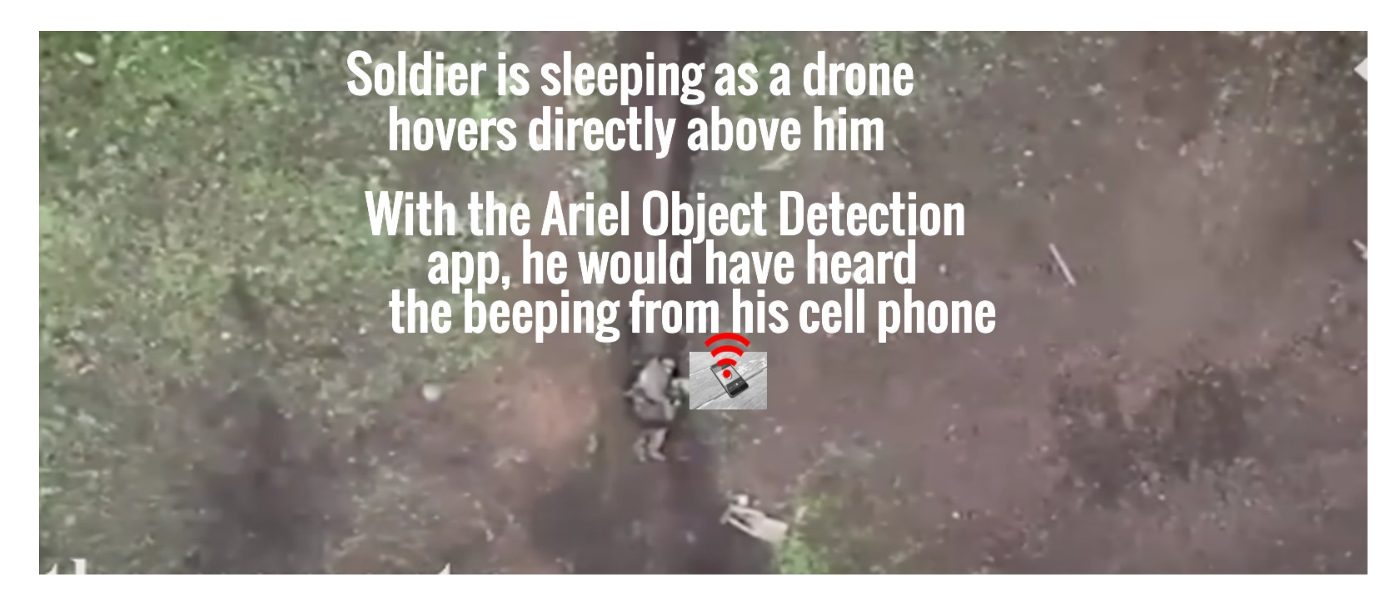
Aerial Object Detection

by Anthony of Boston

Wait for the model to load before clicking the button to enable the webcam - at which point it will become visible to use. The app will beep when an aerial object is located. The longer an aerial object is hovering near you, the longer the beeping noise. For soldiers, this could mean that a drone is targeting them. Ideally, soldiers would use the app on their cell phones and attach the device to the top area of their vehicles or to their body while sleeping in the trenches. Keep mind that cell phone wireless connectivity must remain "off" in combat environments. In civilian environments, the cell phone, with wireless turned on, could be placed on rooftops. With internet access, a user could view the aerial scene remotely with facebook live.





Below is the HTML code for the Aerial Object Detection App that you can copy and paste and test in html:

```
<html lang="en">
<head>
<title>Aerial Object Detection</title>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="stylesheet" href="style.css">
</head>
<style>
.btn-block { width: 100%; display:block; }

* { -webkit-box-sizing:border-box; -moz-box-sizing:border-box; -ms-box-sizing:border-box; -o-box-sizing:border-box; box-sizing:border-box; }
html { width: 100%; height:100%; overflow:scroll; }

body {
width: 100%;
height:100%;
font-family: 'Open Sans', sans-serif;
background: #092756 no-repeat center center fixed;
color: #fff;
font-size: 18px;
text-align: center;
letter-spacing: 1.2px;
```

```
}

h1 {

font-style: bold;
color: #ffffff;
}

video {
display: block;
}

section {
opacity: 1;
transition: opacity 500ms ease-in-out;
}
.removed {
display: none;
}

.invisible {
opacity: 0.2;
}

.camView {
position: relative;
float: center;
text-align: center;
width: calc(100% - 20px);
margin: 10px;
cursor: pointer;
}

.camView p {
position: absolute;
padding: 5px;
background-color: rgba(255, 0, 0, 0.85);
color: #FFF;
border: 1px rgba(255, 0, 0, 0.7);
z-index: 2;
font-size: 17px;
}

.highlighter {

border: 4px dashed #ff0000;
z-index: 1;
```

```
position: absolute;
}</style>
<body>
<h1>Aerial Object Detection</h1>

<p>Wait for the model to load before clicking the button to enable the webcam -
at which point it will become visible to use. The app will beep when an aerial
object is located. The longer an aerial object is hovering near you, the longer the
beeping noise. For soldiers, this could mean that a drone is targeting them.
Ideally, soldiers would use the app on their cell phones and attach the device to
the top area of their vehicles or to their body while sleeping in the trenches.
Keep mind that cell phone wireless connectivity must remain "off" in combat
environments. In civilian environments, the cell phone, with wireless turned on,
could be placed on rooftops. With internet access, a user could view the aerial
scene remotely with facebook live</p>

<p style = visibility: hidden id="textID"> Aerial Object Detected</p>

<div id="countdown"></div>

<section id="demos" class="invisible">

<p id="demo"></p>
<div id="liveView" class="camView">
<button id="webcamButton">Enable Webcam</button>
<video id="webcam" autoplay width="640" height="480"></video>
</div>
</section>
<p><br> </p>
<p><br> </p>
<div id="powered_by" style="font-size:11px">
<a href="https://oscar-defelice.github.io">
<img src="https://user-images.githubusercontent.com/49638680/98257158-
a2594880-1f7f-11eb-95c8-11e438336175.png" height="100px" /><br>
</a>
Powered by
<a href="https://oscar-defelice.github.io" style="color:white;font-
size:11px">Oscar de Felice</a>
</div>
<p><br> </p>
<script src="https://cdn.jsdelivr.net/npm/@tensorflow/tfjs/dist/tf.min.js"
type="text/javascript"></script>
<script
src="https://cdn.jsdelivr.net/npm/@tensorflow-models/coco-ssd"></script>
<script src="script.js" defer></script>
<script>const video = document.getElementById('webcam');
const liveView = document.getElementById('liveView');
const demosSection = document.getElementById('demos');
```

```
const enableWebcamButton = document.getElementById('webcamButton');
var model = undefined;
var children = [];
function getUserMediaSupported() {
return !!(navigator.mediaDevices &&
navigator.mediaDevices.getUserMedia);
}
if (getUserMediaSupported()) {
enableWebcamButton.addEventListener('click', enableCam);
} else {
console.warn('getUserMedia() is not supported by your browser');
}
function enableCam(event) {
if (!model) {
return;
}
event.target.classList.add('removed');
const constraints = {
video: true
};
navigator.mediaDevices.getUserMedia(constraints).then(function(stream) {
video.srcObject = stream;
video.addEventListener('loadeddata', predictWebcam);
});
}

var beep = (function () {
var ctxClass = window.audioContext ||window.AudioContext ||
window.AudioContext || window.webkitAudioContext
var ctx = new ctxClass();
return function (duration, type, finishedCallback) {

duration = +duration;
type = (type % 5) || 0;

if (typeof finishedCallback != "function") {
finishedCallback = function () {};
}

var osc = ctx.createOscillator();

osc.type = type;

osc.connect(ctx.destination);
if (osc.noteOn) osc.noteOn(0);
if (osc.start) osc.start();

setTimeout(function () {
```

```
if (osc.noteOff) osc.noteOff(0);
if (osc.stop) osc.stop();
finishedCallback();
}, duration);

};
})();

function textToSpeech() {
const speech = new SpeechSynthesisUtterance();
let voices = speechSynthesis.getVoices();
let convert = document.getElementById("textID").innerHTML;

speech.text = convert;

speech.volume = 1;
speech.rate = 0.9;
speech.pitch = 0;

speech.voice = voices[0];

speechSynthesis.speak(speech);
}


function pause() {
window.speechSynthesis.pause();
}


function stop() {
window.speechSynthesis.cancel();
}


cocoSsd.load().then(function (loadedModel) {
model = loadedModel;
demosSection.classList.remove('invisible');
});

function predictWebcam() {

model.detect(video).then(function (predictions) {
for (let i = 0; i < children.length; i++) {
liveView.removeChild(children[i]);
}
children.splice(0);
window.speechSynthesis.pause();
```

```
for (let n = 0; n < predictions.length; n++) {

if ( predictions[n].class == "bird") {
predictions[n].class = "Aerial Object Detected"
window.speechSynthesis.resume();
textToSpeech();
beep(1000, 2, function () {
});
const p = document.createElement('p');
p.innerText = predictions[n].class + ' - with '
+ Math.round(parseFloat(predictions[n].score) * 100)
+ '% confidence.';
p.style = 'margin-left: ' + predictions[n].bbox[0] + 'px; margin-top: '
+ (predictions[n].bbox[1] - 10) + 'px; width: '
+ (predictions[n].bbox[2] - 10) + 'px; top: 0; left: 0;';


const highlighter = document.createElement('div');
highlighter.setAttribute('class', 'highlighter');
highlighter.style = 'left: ' + predictions[n].bbox[0] + 'px; top: '
+ predictions[n].bbox[1] + 'px; width: '
+ predictions[n].bbox[2] + 'px; height: '
+ predictions[n].bbox[3] + 'px;';

liveView.appendChild(highlighter);
liveView.appendChild(p);
children.push(highlighter);
children.push(p);

}
else{
}

if ( predictions[n].class == "kite") {
predictions[n].class = "Aerial Object Detected"
window.speechSynthesis.resume();
textToSpeech();
beep(1000, 2, function () {
});



const p = document.createElement('p');
p.innerText = predictions[n].class + ' - with '
+ Math.round(parseFloat(predictions[n].score) * 100)
+ '% confidence.';
p.style = 'margin-left: ' + predictions[n].bbox[0] + 'px; margin-top: '
+ (predictions[n].bbox[1] - 10) + 'px; width: '
```

```
+ (predictions[n].bbox[2] - 10) + 'px; top: 0; left: 0;';


const highlighter = document.createElement('div');
highlighter.setAttribute('class', 'highlighter');
highlighter.style = 'left: ' + predictions[n].bbox[0] + 'px; top: '
+ predictions[n].bbox[1] + 'px; width: '
+ predictions[n].bbox[2] + 'px; height: '
+ predictions[n].bbox[3] + 'px;';

liveView.appendChild(highlighter);
liveView.appendChild(p);
children.push(highlighter);
children.push(p);

}
else{
}





if ( predictions[n].class == "frisbee") {
predictions[n].class = "Aerial Object Detected"
window.speechSynthesis.resume();
textToSpeech();
beep(1000, 2, function () {
});



const p = document.createElement('p');
p.innerText = predictions[n].class + ' - with '
+ Math.round(parseFloat(predictions[n].score) * 100)
+ '% confidence.';
p.style = 'margin-left: ' + predictions[n].bbox[0] + 'px; margin-top: '
+ (predictions[n].bbox[1] - 10) + 'px; width: '
+ (predictions[n].bbox[2] - 10) + 'px; top: 0; left: 0;';


const highlighter = document.createElement('div');
highlighter.setAttribute('class', 'highlighter');
highlighter.style = 'left: ' + predictions[n].bbox[0] + 'px; top: '
+ predictions[n].bbox[1] + 'px; width: '
+ predictions[n].bbox[2] + 'px; height: '
+ predictions[n].bbox[3] + 'px;';
```

```
liveView.appendChild(highlighter);
liveView.appendChild(p);
children.push(highlighter);
children.push(p);

}
else{
}

if ( predictions[n].class == "remote") {
predictions[n].class = "Aerial Object Detected"
window.speechSynthesis.resume();
textToSpeech();
beep(1000, 2, function () {
});



const p = document.createElement('p');
p.innerText = predictions[n].class + ' - with '
+ Math.round(parseFloat(predictions[n].score) * 100)
+ '% confidence.';
p.style = 'margin-left: ' + predictions[n].bbox[0] + 'px; margin-top: '
+ (predictions[n].bbox[1] - 10) + 'px; width: '
+ (predictions[n].bbox[2] - 10) + 'px; top: 0; left: 0;';


const highlighter = document.createElement('div');
highlighter.setAttribute('class', 'highlighter');
highlighter.style = 'left: ' + predictions[n].bbox[0] + 'px; top: '
+ predictions[n].bbox[1] + 'px; width: '
+ predictions[n].bbox[2] + 'px; height: '
+ predictions[n].bbox[3] + 'px;';

liveView.appendChild(highlighter);
liveView.appendChild(p);
children.push(highlighter);
children.push(p);

}
else{
}


if ( predictions[n].class == "knife") {
predictions[n].class = "Aerial Object Detected"
window.speechSynthesis.resume();
textToSpeech();
```

```
beep(1000, 2, function () {
});



const p = document.createElement('p');
p.innerText = predictions[n].class + ' - with '
+ Math.round(parseFloat(predictions[n].score) * 100)
+ '% confidence.';
p.style = 'margin-left: ' + predictions[n].bbox[0] + 'px; margin-top: '
+ (predictions[n].bbox[1] - 10) + 'px; width: '
+ (predictions[n].bbox[2] - 10) + 'px; top: 0; left: 0;';


const highlighter = document.createElement('div');
highlighter.setAttribute('class', 'highlighter');
highlighter.style = 'left: ' + predictions[n].bbox[0] + 'px; top: '
+ predictions[n].bbox[1] + 'px; width: '
+ predictions[n].bbox[2] + 'px; height: '
+ predictions[n].bbox[3] + 'px;';

liveView.appendChild(highlighter);
liveView.appendChild(p);
children.push(highlighter);
children.push(p);

}
else{
}

if ( predictions[n].class == "airplane") {
predictions[n].class = "Aerial Object Detected"
window.speechSynthesis.resume();
textToSpeech();
beep(1000, 2, function () {
});



const p = document.createElement('p');
p.innerText = predictions[n].class + ' - with '
+ Math.round(parseFloat(predictions[n].score) * 100)
+ '% confidence.';
p.style = 'margin-left: ' + predictions[n].bbox[0] + 'px; margin-top: '
+ (predictions[n].bbox[1] - 10) + 'px; width: '
+ (predictions[n].bbox[2] - 10) + 'px; top: 0; left: 0;';
```

```
const highlighter = document.createElement('div');
highlighter.setAttribute('class', 'highlighter');
highlighter.style = 'left: ' + predictions[n].bbox[0] + 'px; top: '
+ predictions[n].bbox[1] + 'px; width: '
+ predictions[n].bbox[2] + 'px; height: '
+ predictions[n].bbox[3] + 'px;';

liveView.appendChild(highlighter);
liveView.appendChild(p);
children.push(highlighter);
children.push(p);

}
else{
}
}
window.requestAnimationFrame(predictWebcam);
});
}


</script>
</body>
</html>
```